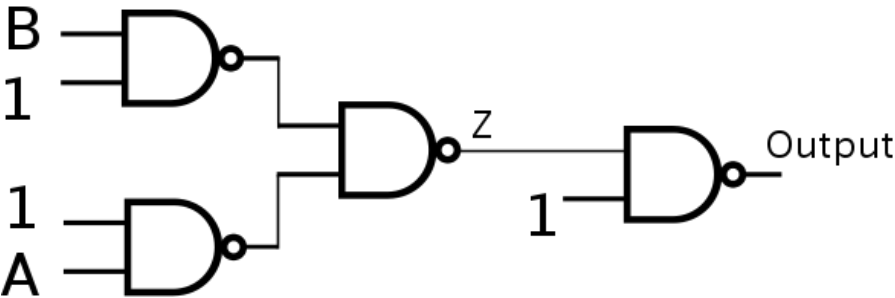


HW 3 Due on February 19th at 4:30 pm. Name: \_\_\_\_\_

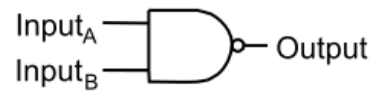
1. Logic Gate Combinations (Logic\_Gates)

In the image below, four NANDS are connected and three of the inputs are set to 1. What are the values of Z and Output if B = 0 and A = 1? For reference, the logic table associated with a NAND gate is shown.

- A. Z = 1, Output = 0
- B. Z = 0, Output = 0
- C. Z = 1, Output = 1
- D. Z = 0, Output = 1



NAND gate

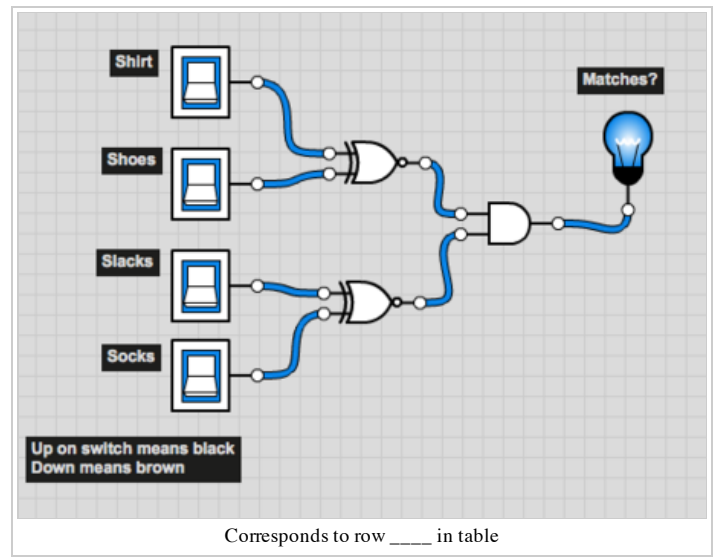
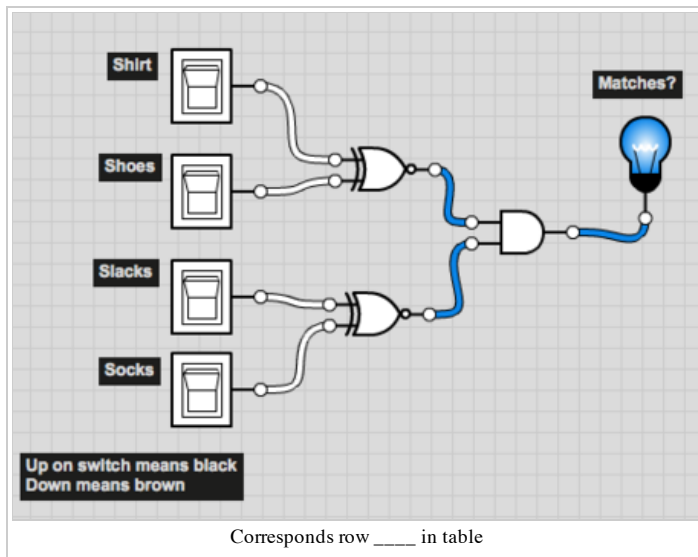


Input A	Input B	Output
0	0	1
0	1	1
1	0	1
1	1	0

2. Logic tables with more than two inputs (A\_Basic\_Computer)

The following logic table was implemented using logic gates and switches. Fill in the caption on the following two images to indicate the row of the logic table that corresponds to state of the switches in the images.

Socks	Pants	Shirt	Shoes	Matches?
0	0	0	0	1
0	1	0	1	0
1	0	0	1	0
0	0	1	1	0
1	0	0	0	0
0	1	1	0	0
1	0	1	0	0
1	1	1	1	1



## 2.1. Bird brain (A\_Basic\_Computer)

In this problem you will practice translating a set of statements about a system (a bird) to a logic circuit. This problem is similar to that discussed in A\_Basic\_Computer#Adding\_Binary\_Numbers\_prelude.

First, watch the video about using the program Logicly: Video.

Next, read [1] (<http://www.mind.ilstu.edu/curriculum/modOverview.php?modGUI=212>) .

1. Create a circuit using <http://logic.ly/demo> that reproduces Table 2 at [2] ([http://www.mind.ilstu.edu/curriculum/mcp\\_neurons/mcp\\_neuron\\_1.php?modGUI=212&compGUI=1749&itemGUI=3018](http://www.mind.ilstu.edu/curriculum/mcp_neurons/mcp_neuron_1.php?modGUI=212&compGUI=1749&itemGUI=3018)) .
2. Label the inputs and outputs appropriately (That is, tell me what a switch in the on or off position in corresponds to in Table 2 [3] ([http://www.mind.ilstu.edu/curriculum/mcp\\_neurons/mcp\\_neuron\\_1.php?modGUI=212&compGUI=1749&itemGUI=3018](http://www.mind.ilstu.edu/curriculum/mcp_neurons/mcp_neuron_1.php?modGUI=212&compGUI=1749&itemGUI=3018)) .
3. What does a lit/un-lit bulb correspond to in Table 2?.)
4. Sketch the diagram that you created or attach a printed version of your logic circuit. (Instructions for printing are given at the end of the Video.